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DUPLICATE

COMPLETE SPECIFICATION.

Improvements in Bread and Biscuit Making, and in the Manufacture of an Improved Flour and Meal for use therein, or for Pastry, Infants' and Invalids' Food Purposes.

I, JOHN THOMAS O'CALLAGHAN, 40, Ranelagh Road, South Tottenham, London, N., in the County of Middlesex, Secretary to a company manufacturing food stuffs, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to the preparation of a flour and meal, used for the manufacture of what is known as malt bread, malt biscuits, malt rusks, infants' and invalids' food and the like, and also for the manufacture of digestive whitey-brown bread, digestive brown bread, malt milk bread, malt milk biscuits, malt milk rusks, malt milk pastry, malt milk infants' and malt milk invalids' food and the like, by means of which the said articles of diet are rendered easy of digestion, highly nourishing and particularly appetising.

My invention is applicable both to the manufacture of what I may term for the purposes of this specification "digestive whitey-brown meal" "digestive brown meal" "malt milk flour" malt milk meal" "malt white flour" and "malt meal" for the manufacture of fermented bread and the like, and that modifications of the process which I adopt for the manufacture of the said flours and meals varies in certain particulars hereinafter to be mentioned from the modification of the process when the products desired are for the manufacture of unfermented bread, biscuits and the like.

In the first instance I prepare what I may term for the purposes of this specification "stock mixtures" each of which I designate with a number.

To prepare "stock mixture No. 1" I take white maize—American for preference—and grind and dress it, by means of suitable machinery, very fine, eliminating the germ and cuticle. I bake the resultant meal in covered tins, in an oven or kiln at a heat of 215 degrees Fah. for at least six hours.

To prepare "stock mixture No. 2," I take white maize—American for preference—and malt it, the process being similar to that by which barley is malted. When the malting has been effected I grind and dress the malted maize very fine discarding the tailings.

To prepare "stock mixture No. 3" I take yellow maize American for preference—and treat it the same as for "stock mixture No. 2."

To prepare "stock mixture No. 4 I take unhusked rice—(paddy)—and also treat it the same as for "stock mixture No. 2."

To prepare "stock mixture No. 5" I take seven hundred and fifty (750) pounds by weight of good sound and cleaned English red wheat which I place in a suitable vessel and pour upon it six (6) gallons of lime water, in which has been previously dissolved twelve (12) pounds by weight of salt and thirty-two (32) pounds by weight of liquid sugar of malt. When the wheat has absorbed this solution, I thoroughly dry it in a kiln or by some other convenient process, at a heat of 215

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degrees Fah. until it developes a malty nutty smell and flavor. I also dry in a similar way two hundred and fifty (250) pounds by weight of germ of wheat until it becomes crisp. I mix the wheat and germ together and grind and dress the mixture very fine discarding the tailings.

To prepare "stock mixture No. 6" I proceed as detailed in the preceding paragraph for "stock mixture No. 5" with the exception that I add to the combined solution of lime water, salt and sugar of malt, seventeen (17) pounds by weight of phosphoric acid of the specific gravity of 1,500, whilst to one hundred (100) pounds by weight of the dried germ of wheat I add two (2) gallons of distilled water in which has been dissolved six pounds eight ounces (6 lbs. 8 oz.) by weight of bi-carbonate of potash. When the germ has absorbed this solution I again dry it at the heat of 215 degrees Fah. until it becomes crisp. The germ is then mixed with the remaining one hundred and fifty (150) pounds of germ, mixed with the seven hundred and fifty (750) pounds of wheat and ground and dressed very fine, the tailings being rejected.

To prepare "stock mixture No. 7" I proceed as detailed for producing "stock mixture No. 5" with the exception that instead of using twelve (12) pounds by weight of salt I only use four (4) pounds.

To prepare "stock mixture No. 8" I take forty (40) quarts of rich unskimmed milk and evaporate it down by any convenient process to sixteen (16) pounds by weight. To this hot condensed milk I add two (2) quarts of boiling hot lime water, in which has been dissolved four (4) pounds by weight of liquid malt sugar, four (4) pounds by weight of liquid extract of malt, six (6) pounds by weight of vegetable fat and three (3) pounds by weight of salt. I pour this hot solution upon ten (10) pounds by weight of "stock mixture No. 1" and ten (10) pounds by weight of "stock mixture No. 4" mixed together intimately incorporating the same therewith, adding by degrees sixty (60) pounds by weight of strong flour. I pass this mixture through a sieve several times breaking down all lumps. The mixture I afterwards thoroughly dry at a heat below boiling point and again pass through a sieve several times.

To prepare "stock mixture No. 9" I proceed as in the preceding paragraph, but only use one (1) pound by weight of salt, instead of three (3) pounds of salt.

1. To prepare meal for the manufacture of "digestive whitey-brown bread" I take sixty (60) pounds by weight of "stock mixture No. 5" and thoroughly blend it with two hundred and twenty (220) pounds by weight of fairly strong flour.

2. To prepare meal for the manufacture of "digestive brown bread" I proceed as stated in the preceding paragraph, with the exception of using entire wheaten meal in lieu of flour.

3. To prepare meal for the manufacture of "digestive unfermented whitey-brown bread" I take forty (40) pounds by weight of "stock mixture No. 6" and intimately mix it into two hundred and forty (240) pounds by weight of fairly strong flour.

4. To prepare meal for the manufacture of "digestive unfermented brown bread" I proceed as stated in the preceding paragraph, with the exception of using entire wheaten meal instead of flour.

5. To prepare meal for the manufacture of "digestive whitey-brown biscuits' and the like I proceed as stated in the paragraph dealing with "stock mixture No. 7."

6. To prepare malt milk flour for the manufacture of "malt milk bread" I take eighty (80) pounds by weight of "stock mixture No. 8" and thoroughly mix it into two hundred (200) pounds by weight of best town whites flour.

7. To prepare "malt milk meal for the manufacture of malt milk brown-bread" I proceed as stated in the preceding paragraph, but use entire wheaten meal instead of flour.

8. To prepare malt milk flour, and malt milk meal for the manufacture of

"malt milk biscuits" "malt milk rusks" "malt milk infants food" and the like I proceed as stated in the paragraph dealing with "stock mixture No. 9" using either flour or meal as desired.

9. To prepare malt white flour for the manufacture of "malt white bread" I take fifteen (15) pounds by weight of a concentrated liquid extract of barley malt, fifteen (15) pounds by weight of a saturated solution of lime, six (6) pounds by weight of vegetable fat, and three (3) pounds by weight of salt. These ingredients I put into a copper vessel and boil them altogether for five (5) minutes. I allow the mixture to cool down to 100 degrees Fah. and pour it upon thirty five (35) pounds by weight of "stock mixture No. 1" previously put into a trough, and thoroughly and intimately mix it therewith, sieving it several times. I then dry the mixture, and again sieve it, breaking down all lumps, adding thereto by degrees five (5) pounds by weight of "stock mixture No. 2" I now place in a trough two hundred and forty (240) pounds by weight of strong white flour, and add thereto the above mentioned mixture blending and sieving the same several times, so as to thoroughly incorporate the various ingredients.

10. To prepare malt white flour for the manufacture of "malt white biscuits" "malt milk rusks" and the like, I proceed as mentioned in the preceding paragraph with the exception of using only one (1) pound of salt by weight instead of three pounds.

11. To prepare malt white flour for the manufacture of "unfermented malt white bread" I proceed as detailed in paragraph, 9, but I add to the mixture previous to boiling four (4) pounds by weight of phosphoric acid of the specific gravity of 1.500 whilst to the "stock mixture No. 2" I add one pound eight ounces (1 lb. 8 oz.) of bi-carbonate of potash, finely powdered, and thoroughly incorporate the same therewith.

12. To prepare malt meal for the manufacture of "malt meal bread" I proceed as detailed in paragraph 9, with the exception of using wheaten meal instead of flour, and "stock mixture No. 3" instead of "stock mixture No. 2."

13. To prepare malt meal for the manufacture of "malt meal biscuits" "malt meal rusks" and the like I proceed as detailed in paragraph 9, with the exception of using only one (1) pound by weight of salt instead of three pounds, wheaten meal instead of flour and stock mixture No. 3, instead of "stock mixture No. 2."

14. To prepare malt meal for the manufacture of unfermented "malt meal bread" I proceed as detailed in paragraphs 11 and 12.

When I desire to make "digestive whitey-brown bread" "digestive brown bread" "malt milk white bread" "malt milk brown bread" "malt white bread" or "malt meal bread" I take a sufficient quantity of the flours or meals mentioned in the preceding paragraphs for the manufacture of these breads, and make slack doughs with liquor at a heat of 90 degrees Fah. using ordinary compressed yeast in the proportion of five (5) pounds to a sack of flour (280 lbs.). When the dough is well risen I throw it out on a board, weigh off into tins, and after allowing a proof of about twenty (20) minutes thoroughly well bake in an oven not too hot.

When I desire to make unfermented breads of any of the flours or meals, mentioned in the preceding paragraphs for the manufacture of unfermented breads, I take a sufficient quantity thereof and make straight off as quickly as possible a very slack dough, using water only at a heat of 90 degrees Fah. The dough must be weighed off at once, placed in tins and baked immediately in a fairly hot oven.

When I desire to make biscuits, pastry, rusks and the like I take a sufficient quantity of the flours or meals mentioned in the preceding paragraphs for the manufacture of these articles, and proceed in the customary way.

When I desire to make invalids' and infants' food I use the flours or meals mentioned in the preceding paragraphs for the manufacture of these articles, and make into dough using half milk and half water. The dough I roll into thin sheets and bake in a slack oven, not browning them in the least. The sheets are

then thoroughly dried and afterwards finely ground and dressed and put into tins, or airtight packages.

In the several modifications of my processes, hereinbefore specified, I have set forth certain relative proportions and certain temperatures. I desire it to be understood that I do not limit myself to any particular proportion or temperature as these may be departed from (with the exception of bi-carbonate of potash and salt) to a considerable extent without seriously injuring the products obtained. I have however found, by experiment, that the said temperatures and relative proportions give good results and I advise that they may be adhered to, or at any rate not departed from, to an extent exceeding say ten *per cent.*

I do not claim the exclusive right of using in my invention, liquid extract of malt, bi-carbonate of potash phosphoric and lime water.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. The herein described process of making "digestive whitey-brown meal" "digestive brown meal" "malt milk flour" "malt milk meal" "malt white flour" and "malt meal" which consists in malting rice, malting white maize, malting yellow maize and grinding and dressing the same, grinding and dressing unmalted white maize: melting together as well as boiling together extract of barley malt, sugar of malt, lime water, vegetable fat and salt, mixing the same with the malted rice flour and unmalted and malted white and yellow maize flours, mixing phosphoric acid and bi-carbonate of potash in certain methods with the above mentioned lime water, fat, malt extract and sugar of malt, and finally blending and sieving the product thus obtained with flour or entire wheaten meal, all in the proportions herein set forth, described and stated.

2. The improvements in bread and biscuit making, and in the manufacture of an improved flour and meal for use therein, or for pastry, infants' and invalids' food purposes, substantially as herein described.

Dated this 17th day of August 1898.

JOHN THOMAS O'CALLAGHAN.

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2500